

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB117NM

Site Name: Cinder

Precipitation or Climate Zone: 10-16"

Phase: \_\_\_\_\_

## PHYSIOGRAPHIC FEATURES

### Narrative:

This site is on nearly level to moderately sloping or rolling uplands found near cones or craters. Slopes average 10 percent or less and do not ordinarily exceed 15 percent. Elevations vary from about 6,000 to 7,800 feet.

### Land Form:

1. Cinder cone

2.

3.

### Aspect:

1. not significant

2.

3.

	Minimum	Maximum
Elevation (feet)	6000	7800
Slope (percent)	0	15
Water Table Depth (inches)	--	--
Flooding:	Minimum	Maximum
Frequency	--	--
Duration	--	--
Ponding:	Minimum	Maximum
Depth (inches)	--	--
Frequency	-	--
Duration	--	--

### Runoff Class:

Not available

## CLIMATIC FEATURES

### Narrative:

Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50 degrees F or lower and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site which is quite susceptible to disturbance and is at or near its productive potential only when both natural warm- and cool- season dominants are present.

	Minimum	Maximum
Frost-free period (days):	51	171
Freeze-free period (days):	130	252
Mean annual precipitation (inches):	10	16

### Monthly moisture (inches) and temperature (<sup>0</sup>F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.40	.91	12.9	47.0
February	.43	.65	16.6	51.2
March	.47	1.10	20.9	57.1
April	.30	.49	26.1	65.3
May	.46	.98	33.4	74.2
June	.51	.57	41.4	84.2
July	2.15	3.45	50.4	85.1
August	2.28	3.03	48.7	82.4
September	1.29	1.68	41.4	77.9
October	.81	1.12	29.4	69.2
November	.38	.71	19.1	57.3
December	.53	.95	13.1	48.9

Climate Stations:					
Station ID	290640	Location	Augustine2E	From:	Period 05/01/26 To 07/31/00
Station ID	296812	Location	Pietown 19NE	From:	Period 09/01/88 To 07/31/00
Station ID	297180	Location	Quemado	From:	Period 08/01/15 To 07/31/00

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Station ID	297180	Location	Quemado	From:	Period 08/01/15	To	07/31/00

## INFLUENCING WATER FEATURES

### Narrative:

This site is not influenced by water from wetlands or streams.

### Wetland description:

System	Subsystem	Class
N/A		

### If Riverine Wetland System enter Rosgen Stream Type:

N/A

## REPRESENTATIVE SOIL FEATURES

### Narrative:

These soils are derived from volcanic cinders. Typically, they have gravelly or very gravelly loam surfaces, but these may also be gravelly or very gravelly sandy loams or sandy clay loams. They are moderately deep to deep and are well drained. The subsoils are usually gravelly or very gravelly throughout. Permeability is moderately rapid, and the available water capacity is low to moderate.

Parent Material Kind: Volcanic ash

Parent Material Origin: Volcanic breccia - unspecified

### Surface Texture:

1. gravelly
2. very gravelly loam
3. gravelly sandy loams, sandy clay loams

### Surface Texture Modifier:

1. N/A
2.
3.

Subsurface Texture Group: Gravelly or very gravelly

Surface Fragments  $\leq 3''$  (% Volume): --

Surface Fragments  $> 3''$  (% Volume): --

Subsurface Fragments  $\leq 3''$  (% Volume): 5-56%

Subsurface Fragments  $\geq 3''$  (% Volume): --

Drainage Class:	Minimum	Maximum Somewhat excessively
Permeability Class:	Moderately slow	Moderately rapid
Depth (inches):	0	60
Electrical Conductivity (mmhos/cm):	0	2.0
Sodium Absorption Ratio:	--	--
Soil Reaction (1:1 Water):	7.4	9.0
Soil Reaction (0.1M CaCl <sub>2</sub> ):	--	--
Available Water Capacity (inches):	0 (low)	2 (moderate)
Calcium Carbonate Equivalent (percent):	--	--

## PLANT COMMUNITIES

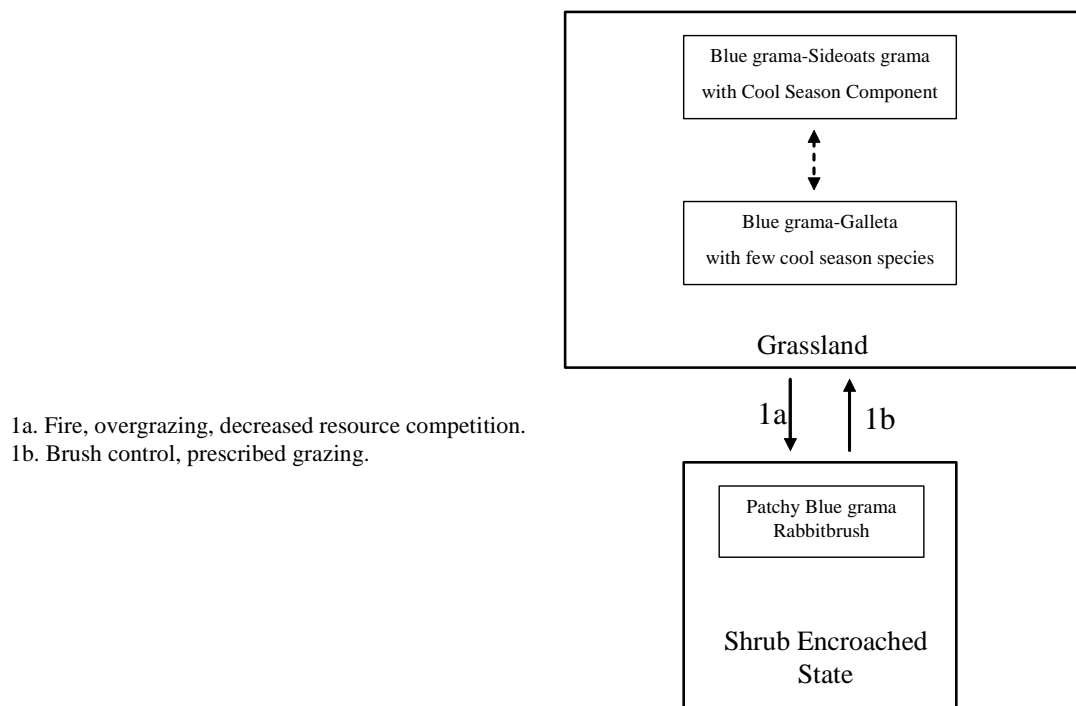
### Ecological Dynamics of the Site:

#### Overview

This site occurs on cinder cones, hills, and plateaus. It occurs as a distinct unit or as part of a complex with Gravelly sites. The historic plant community of the Cinder site is a grassland characterized by both warm and cool season perennial bunchgrasses, scattered shrubs and forbs, and occasionally a few trees. Blue grama is the dominant grass. Widely scattered patches of wolfberry, Apache plume, and four-wing saltbush are common. A few scattered piñon and juniper may also occur on this site. This site is susceptible to encroachment of rabbitbrush. Rabbitbrush may increase on this site in response to fire, overgrazing, and decreased resource competition.

#### Plant Communities and Transitional Pathways (diagram)

##### MLRA 36, WP-2 Cinder



Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 Narrative Label: HCPC

Plant Community Narrative: State Containing the Historic Climax Plant Community  
**Grassland State:** The historic plant community is dominated by blue grama, with sideoats grama and galleta occurring as the sub-dominant grasses. New Mexico feathergrass, western wheatgrass, and bottlebrush squirreltail are the most frequently encountered cool-season species. Widely scattered patches of wolfberry, Apache plume, fourwing saltbush, and winterfat are common. Piñon and juniper may also be present. Heavy continuous use by livestock can result in a decrease in cool-season grasses, sideoats grama, spike muhly and winterfat. Blue grama, galleta, ring muhly, and threeawns typically increase in relative cover.

**Diagnosis:** Grass cover is uniform with few large bare areas present. Shrubs are scattered with canopy cover averaging five percent. Evidence of erosion such as pedestalling of grasses, rills and gullies are infrequent.

Ground Cover (Average Percent of Surface Area).

Grasses & Forbs	22
Bare ground	24
Surface gravel	35
Surface cobble and stone	5
Litter (percent)	14
Litter (average depth in cm.)	2
Surface Gravel (% cover)	

Plant Community Annual Production (by plant type):

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	298	521	744
Forb	28	49	70
Tree/Shrub/Vine	28	49	70
Lichen	--	--	--
Moss	--	--	--
Microbiotic Crusts	--	--	--
Totals	354	619	884

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	BOGR2	Blue grama	184-215	184-215
2	BOCU	Sideoats grama	61-92	61-92
3	HENE5 HECO 26 PASM	NM Feathergrass Needle and Thread Western wheatgrass	61-92	61-92
4	PLJA	Galleta	31-61	31-61
5	ELEL5 ACHY	Bottlebrush squirreltail Indian ricegrass	31-61	31-61
6	MUWR LYPH	Spike muhly Wolftail	31-92	31-92
7	ARIST MUTO2 SPCR	Threeawns Ring muhly Sand dropseed	6-31	6-31
8	BOER4 BOHI2	Black grama Hairy grama	0-18	0-18

Plant Type - Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
9	FAPA LYCIU ATCA2	Apacheplume Wolfberry Fourwing saltbush	6-31	6-31
10	KRLA2	Winterfat	6-18	6-18
11	GUSA2 TECA2 ERNAN5 ARBI3 ARFR4	Broom snakeweed Spineless horsebrush Rubber rabbitbrush Bigelow sagebrush Fringed sagewort	6-18	6-18
12	PIED JUNIP	Pinyon Juniper	0-18	0-18

Plant Type – Forb



13	2FP	Perennial forbs	6-43	6-43
14	2FA	Annual forbs	6-18	6-18

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Growth Curves

Growth Curve ID NM 0308

Growth Curve Name: HCPC

Growth Curve Description: WP-2

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	5	7	10	15	25	25	8	5	0	0

**Additional States:**

**Shrub Encroached State:** This state is characterized by the noticeable increase of rabbitbrush and decreased annual production of grasses. Blue grama is the dominant grass species, and ring muhly, galleta, and dropseeds are typically found at increased densities. Cool season grasses are found in isolated patches or are absent. Annual production of grasses is substantially reduced.

**Diagnosis:** Rabbitbrush is found at increased densities relative to the Grassland state. Grass cover is patchy with large bare areas present. Low vigor blue grama is the dominant grass. Evidence of erosion such as pedestalling of plants, elongated water flow patterns, litter dams, and rills is common. Gullies may be present, especially on slopes greater than 10 percent.

**Transition to Shrub Encroached State (1a)** Rabbitbrush is a fire adapted species and may increase or quickly occupy burned areas.<sup>6</sup> Rabbitbrush can increase after 1-3 years following fire.<sup>5</sup> Seed production and seedling survival of rabbitbrush is believed to be sensitive to resource competition.<sup>2</sup> During years of limited rainfall, high grass cover may help to suppress shrub seedlings by competing directly for soil moisture. Rabbitbrush is believed to increase under heavy grazing pressure.<sup>4</sup> Overgrazing can reduce grass cover and provide competition free areas for the establishment of rabbitbrush seedlings.

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover.
- Increase in size and frequency of bare patches.
- Increase in amount of rabbitbrush seedlings.

**Transition back to Grassland (2b)** Brush control is necessary to initiate the transition back to the grassland state. Chemical control has been shown to be effective in the control of rabbitbrush<sup>1, 3</sup>, but the results may vary widely depending on time and rate of application. Root plowing and other mechanical control methods that sever the plant below the root crown may reduce rabbitbrush densities. Follow up treatment may be necessary. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover.

## ECOLOGICAL SITE INTERPRETATIONS

### Animal Community:

This range site provides habitats which support a resident animal community that is characterized by pronghorn antelope, coyote, black-tailed jackrabbit, Merriam's kangaroo rat, white-throated woodrat, silky pocket mouse, sparrow hawk, chipping sparrow, mourning dove, leopard lizard, short-horned lizard, and prairie rattlesnake.

The chestnut-collard longspur winters on this site, and the common raven and prairie falcon hunt over it.

### Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations	
Soil Series	Hydrologic Group
Ceniza	B

#### Recreational Uses:

This site offers fair to good potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good to excellent potential for pronghorn antelope hunting.

#### Wood Products:

This site has little significant value for wood products.

#### Other Products:

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year, although it is more suited to grazing animals (cattle or sheep) than browsers (goats). Continuous year- long grazing by cattle will ordinarily result in a decrease in such species as New Mexico feathergrass, needle-and-thread, western wheatgrass, and bottlebrush squirreltail. Prolonged heavy use will also cause a decline of sideoats grama, winterfat and spike muhly. Blue grama may initially increase to the point that occupies 75 to 80 percent of the species composition. The site, at this point, will also be characterized by increases in ring muhly, threeawns, rabbitbrush, and possibly pinyon and juniper. Production in these instances may be cut substantially.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	3.5 - 4.6
75 – 51	4.4 - 6.6
50 – 26	6.4 - 11.0
25 – 0	11.0 +

Plant Preference by Animal Kind:

	Code	Species Preference	Code
Stems	S	None Selected	N/S
Leaves	L	Preferred	P
Flowers	F	Desirable	D
Fruit/Seeds	F/S	Undesirable	U
Entire Plant	EP	Not Consumed	NC
Underground Parts	UP	Emergency	E
		Toxic	T

Animal Kind: Livestock

Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Sideoats grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
NM Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needle-and-thread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Western wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Bottlebrush squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	D	D	D	U
Winterfat	Krascheninnikovia lanata	EP	D	D	P	P	P	P	P	P	D	D	D	D
Fourwing saltbush	Atriplex canescens	EP	P	P	P	P	D	D	D	D	D	P	P	P
Spike muhly	Muhlenbergia wrightii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Indian ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P

## **Supporting Information**

### Associated Sites:

<u>Site Name</u>	<u>Site ID</u>	<u>Site Narrative</u>
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### Similar Sites:

<u>Site Name</u>	<u>Site ID</u>	<u>Site Narrative</u>
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### State Correlation:

This site has been correlated with the following states:

### Inventory Data References:

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
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### Type Locality:

### Relationship to Other Established Classifications:

### Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus & Mesas Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: McKinley, Catron, Cibola, Socorro and Sandoval.

1. Cluff, G.J., B.A. Roundy, R.A. Evans, and J.A. Young. 1983. Herbicidal control of greasewood (*Sarcobatus vermiculatus*) and salt rabbitbrush (*Chrysothamnus nauseosus* ssp. *consimilis*). *Weed Science*. 31: 275-279.
2. McKell, C. M., and W. W. Chilcote. 1957. Response of Rabbitbrush following removal of competing vegetation. *Journal of Range Management*. 10: 228-230
3. Whisenant, S.G. 1988. Control of threadleaf rubber rabbitbrush with herbicides. *Journal of Range Management*. 41: 470-472
4. Whitson, T.D. (ed.). 1999. *Weeds of the West*. The Western Society of Weed Science, Wyoming. pp 103
5. Wright, H. A. 1972. Shrub response to fire. In: *Fire Effects Information System*, [Online].

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: [http://www.fs.fed.us/database/feis/\[2004\]](http://www.fs.fed.us/database/feis/[2004]).

6. Young, R. P. 1983. Fire as a vegetation management tool in rangelands of the Intermountain Region. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: [http://www.fs.fed.us/database/feis/\[2004\]](http://www.fs.fed.us/database/feis/[2004]).

Characteristic Soils Are:	
Other Soils included are:	

Site Description Approval:

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Don Sylvester	02/15/80	Don Sylvester	02/15/80

Site Description Revision:

	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Brenda Simpson	08/20/02	George Chavez	03/03/05
David Trujillo	12/16/04		